

- said chicory roots have had a growing period of at least 150 days,

- said chicory has been seeded

- in the northern hemisphere within a period selected from the periods ranging from December 1 till March 14, from March 15 till May 14, from May 15 till May 31, from June 1 till June 14, and from June 15 till November 30, provided that when said chicory has been seeded in the periods from May 15 till May 31, and from June 1 till June 14, the chicory roots have had a growing period of at least 180 days, and provided that when said chicory has been seeded in the period from March 15 till May 14, the chicory roots have been grown and processed under climatological conditions wherein, within a period of at least 220 consecutive days immediately preceding the end of the processing of the roots, no low temperature conditions occurred which triggered the FEH gene, and the chicory roots have had a minimum growing period of at least 160 days,

- in the southern hemisphere within a period selected from the periods ranging from June 1 till September 14, from September 15 till September 30, from October 1 till November 14, from November 15 till November 30, and from December 1 till May 31, and

- the inulin obtained is

- standard grade or low sugar standard grade chicory inulin with a ( $\overline{DP}$ ) of at least 10, or

- improved standard grade or improved low sugar standard grade chicory inulin with a mean ( $\overline{DP}$ ) of at least 12, or

- high performance grade chicory inulin with a ( $\overline{DP}$ ) of at least 20, or
- improved high performance grade chicory inulin with a mean ( $\overline{DP}$ ) of at least 20,
- with the mean ( $\overline{DP}$ ) being taken over a processing period of at least 60 days.

30. Process according to claim 29, wherein the chicory has had a growing period of at least 180 days.

31. Process according to claim 29, wherein the chicory has been seeded in the northern hemisphere.

32. Process according to claim 29, for the manufacture of improved standard grade chicory inulin, wherein the roots of chicory have been grown and processed under climatological temperature conditions wherein, within a period of at least 220 consecutive days immediately preceding the end of the processing of the roots, no low temperature conditions occurred which triggered the FEH gene in chicory roots, said roots have had a growing period of at least 160 days, and the inulin obtained is improved standard grade chicory inulin with a mean ( $\overline{DP}$ ) taken over a processing period of at least 60 days, which is at least 12.

33. Process according to claim 32, wherein no low temperature conditions which trigger the FEH gene in chicory roots occur within a total period of at least 240 consecutive days and the chicory has had a growing period of at least 180 days.

34. Process according to claim 33, wherein the chicory has been seeded in the northern hemisphere within a period selected from the periods ranging from December

1 till March 14, from March 15 till May 14, from May 15 till May 31, and from June 1 till November 30, or in the southern hemisphere within a period selected from the periods ranging from June 1 till September 14, from September 15 till November 14, from November 15 till November 30, and from December 1 till May 31.

35. Process according to claim 29, wherein the said climatological temperature conditions are such that during the concerned period immediately preceding the end of the processing of the chicory roots the temperature in the temperature shelter has not dropped below minus 1°C.

36. Process according to claim 29, wherein said appropriate regions for growing chicory which, besides the known conditions for growing chicory, present said climatological temperature conditions, comprise the Californian region of the USA.

37. Process according to claim 29, for the manufacture of standard grade chicory inulin or improved standard grade chicory inulin, wherein the source material are chicory roots which have been grown and processed under the conditions as defined in claim 29, comprising the following steps:

(i) isolation of the inulin from the chicory roots yielding an aqueous solution of crude inulin,

(ii) purification of the crude inulin obtained in step (i) yielding an aqueous solution of purified inulin, optionally followed by concentration of this solution by partial removal of the water yielding a purified inulin concentrate, and

(iii) isolation in particulate form of the inulin from the aqueous solution or concentrate of purified inulin obtained in step (ii), thereby yielding, respectively, standard grade chicory inulin or improved standard grade chicory inulin.

38. Process according to claim 37, comprising:

- for step (i): extraction with hot water of the inulin from fresh slices or shreads of the chicory roots, yielding an aqueous solution of crude inulin,
- for step (ii): purification of the aqueous solution of crude inulin obtained in step (i) by depuration followed by refining, and
- for step (iii): isolation of, respectively, standard grade chicory inulin or improved standard grade chicory inulin, in particulate form by spray drying.

39. Process according to claim 29, for the manufacture of low sugar standard grade chicory inulin or improved low sugar standard grade chicory inulin containing in total less than 1 weight % monomeric saccharides and sucrose, by conventional techniques from chicory roots, wherein the source material are chicory roots which have been grown and processed under the conditions as defined in claim 29.

40. Process according to claim 39, wherein, respectively, standard grade chicory inulin or improved standard grade chicory inulin or the corresponding intermediate purified inulin, obtained by a process defined in claim 29 is used as a source material and is, in accordance with known techniques, subjected to the following additional consecutive steps:

- (iv) removal of the monomeric saccharides and sucrose, yielding a low sugar inulin solution or concentrate, and

(v) isolating the low sugar inulin in particulate form from the solution or concentrate obtained in step (iv),  
and the product obtained is, respectively, low sugar standard grade chicory inulin with a mean ( $\overline{DP}$ ) of at least 10 or improved low sugar standard grade chicory inulin with a mean ( $\overline{DP}$ ) of at least 12, the mean ( $\overline{DP}$ ) being taken over a processing period of at least 60 days.

41. Process according to claim 29, for the manufacture of high performance grade chicory inulin with a ( $\overline{DP}$ ) of at least 20, or improved high performance grade chicory inulin with a mean ( $\overline{DP}$ ), taken over a processing period of the chicory roots of at least 60 days, of at least 20, which are essentially free from low molecular monomeric saccharides, dimeric saccharides and oligofructose, and essentially free from colorings, salts, proteins, organic acids and technological aids, wherein the source material are chicory roots which have been grown and processed under the conditions as defined in claim 29.

42. Process according to claim 41, wherein standard grade chicory inulin with a ( $\overline{DP}$ ) of at least 12, respectively improved standard grade chicory inulin with a mean ( $\overline{DP}$ ), taken over a processing period of the chicory roots of at least 60 days, of at least 12, or its intermediate, depurated or refined inulin, obtained by a process defined in claim 29, is used as a source material and subjected, in accordance with known techniques, to the following consecutive steps:

(vi) fractionation, and

(vii) isolation in particulate form of the high performance grade inulin from the fractionated product obtained in step (vi),

thereby providing high performance grade chicory inulin, respectively improved high performance grade chicory inulin in a yield of at least 40% based on the source inulin.

43. Process according to claim 42, wherein the fractionation is carried out by directed crystallization of an aqueous metastable solution of the source material, and the isolation of the fractionated inulin in particulate form is carried out by filtration or centrifuging including washing with water.

44. Process according to claim 42, wherein the source inulin has a (DP), respectively a mean ( $\overline{DP}$ ) of at least 14, and the high performance grade chicory inulin, respectively improved high performance grade chicory inulin, is obtained in a yield of at least 45% based on the source material, and has a ( $\overline{DP}$ ), respectively a mean , of at least 20, the mean ( $\overline{DP}$ ) being taken over a processing period of the source chicory roots of at least 60 days.

45. Process for the manufacture of a partial hydrolysate of chicory inulin, by conventional techniques from chicory roots, wherein the source material are chicory roots which have been grown and processed under the conditions as defined in claim 29 and the product obtained in polydisperse oligofructose.

46. Process according to claim 45, wherein respectively, standard grade or improved standard grade chicory inulin or the corresponding intermediates, depurated or refined inulin, obtained by a process defined in claim 29, is used as a source material,

and the product obtained is polydisperse oligofructose containing at least 90% by weight dry substance and the oligofructose has a ( $\overline{DP}$ ) from 2 to 10.

47. Process for the manufacture of a complete hydrolysate of chicory inulin, by conventional techniques from chicory roots, wherein the source material are chicory roots which have been grown and processed under the conditions as defined in claim 29, and the product obtained is fructose.

48. Process according to claim 47, wherein, respectively, standard grade or improved standard grade inulin or the corresponding intermediate, depurated or refined inulin, obtained by a process defined in claim 29, is used as a source material, and the product obtained is fructose containing at least 89% by weight fructose, calculated on dry substance.

49. Process for the manufacture of a derivative of chicory inulin, by conventional techniques from chicory inulin or an intermediate thereof, wherein the source material for the inulin are chicory roots which have been grown and processed under the conditions as defined in claim 29.

50. Improved standard grade chicory inulin with an inulin content, expressed on dry matter, of at least 92% by weight, and a maximal total content of glucose, fructose and sucrose of 8% by weight, characterized in that the inulin has a mean ( $\overline{DP}$ ) taken over a processing period of the source chicory roots of at least 60 days, of at least 12, obtainable by a process according to claim 29.

51. Improved standard grade chicory inulin with an inulin content, expressed on dry matter, of at least 92% by weight, and a maximal total content of glucose,

fructose and sucrose of 8% by weight, characterized in that the inulin has a mean ( $\overline{DP}$ ) taken over a processing period of the source chicory roots of at least 60 days, of at least 12, obtainable by a process according to claim 37.

52. Improved standard grade chicory inulin with an inulin content, expressed on dry matter, of at least 92% by weight, and a maximal total content of glucose, fructose and sucrose of 8% by weight, characterized in that the inulin has a mean ( $\overline{DP}$ ) taken over a processing period of the source chicory roots of at least 60 days, of at least 12, obtainable by a process according to claim 38.

53. Improved low sugar standard grade chicory inulin with, expressed on dry matter, an inulin content of more than 99% by weight, and a total content of glucose, fructose and sucrose of less than 1% by weight, characterized in that the inulin has a mean ( $\overline{DP}$ ) taken over a processing period of the source chicory roots of at least 60 days, of at least 12, obtainable by a process according to claim 29.

54. Improved low sugar standard grade chicory inulin with, expressed on dry matter, an inulin content of more than 99% by weight, and a total content of glucose, fructose and sucrose of less than 1% by weight, characterized in that the inulin has a mean ( $\overline{DP}$ ) taken over a processing period of the source chicory roots of at least 60 days, of at least 12, obtainable by a process according to claim 39.

55. Improved low sugar standard grade chicory inulin with, expressed on dry matter, an inulin content of more than 99% by weight, and a total content of glucose, fructose and sucrose of less than 1% by weight, characterized in that the inulin has a



mean ( $\overline{DP}$ ) taken over a processing period of the source chicory roots of at least 60 days, of at least 12, obtainable by a process according to claim 40.

56. Improved high performance grade chicory inulin which is essentially free from low molecular monomeric saccharides, dimeric saccharides and oligofructose, and essentially free from colorings, salts, proteins, organic acids and technological aids, with a mean ( $\overline{DP}$ ), taken over a processing period of the source chicory roots of at least 60 days, of at least 20, obtainable by a process according to claim 29.

57. Improved high performance grade chicory inulin which is essentially free from low molecular monomeric saccharides, dimeric saccharides and oligofructose, and essentially free from colorings, salts, proteins, organic acids and technological aids, with a mean ( $\overline{DP}$ ), taken over a processing period of the source chicory roots of at least 60 days, of at least 20, obtainable by a process according to claim 41.

58. Improved high performance grade chicory inulin which is essentially free from low molecular monomeric saccharides, dimeric saccharides and oligofructose, and essentially free from colorings, salts, proteins, organic acids and technological aids, with a mean ( $\overline{DP}$ ), taken over a processing period of the source chicory roots of at least 60 days, of at least 20, obtainable by a process according to claim 42.

59. Improved high performance grade chicory inulin which is essentially free from low molecular monomeric saccharides, dimeric saccharides and oligofructose, and essentially free from colorings, salts, proteins, organic acids and technological aids, with a mean ( $\overline{DP}$ ), taken over a processing period of the source chicory roots of at least 60 days, of at least 20, obtainable by a process according to claim 43.

60. Improved high performance grade chicory inulin which is essentially free from low molecular monomeric saccharides, dimeric saccharides and oligofructose, and essentially free from colorings, salts, proteins, organic acids and technological aids, with a mean ( $\overline{DP}$ ), taken over a processing period of the source chicory roots of at least 60 days, of at least 20, obtainable by a process according to claim 44.

61. Method of use of roots of chicory as a source material in a process for the manufacture of chicory inulin, of a partial or a complete hydrolysate of inulin, or a derivative of inulin, characterized in that the roots have been grown in appropriate regions and grown and processed under climatological temperature conditions as defined in claim 29.

62. Method of use of improved standard grade chicory inulin, improved low sugar standard grade chicory inulin or improved high performance grade chicory inulin, as defined in claim 50, as an ingredient in the manufacture of food, feed, drinks, a prophylactic or a therapeutic composition, or a non-food composition.

63. Method of use of improved standard grade chicory inulin, improved low sugar standard grade chicory inulin or improved high performance grade chicory inulin, as defined in claim 53, as an ingredient in the manufacture of food, feed, drinks, a prophylactic or a therapeutic composition, or a non-food composition.

64. Method of use of improved standard grade chicory inulin, improved low sugar standard grade chicory inulin or improved high performance grade chicory inulin, as defined in claim 56, as an ingredient in the manufacture of food, feed, drinks, a prophylactic or a therapeutic composition, or a non-food composition.--